THE ATOM

Los Alamos Scientific Laboratory • December, 1968

Volume 5 Number 12
December, 1968

THE ATOM

Published monthly by the University of California, Los Alamos Scientific Laboratory, Office of Public Relations, P. O. Box 1663, Los Alamos, New Mexico 87544. Second Class Postage Paid at Los Alamos.

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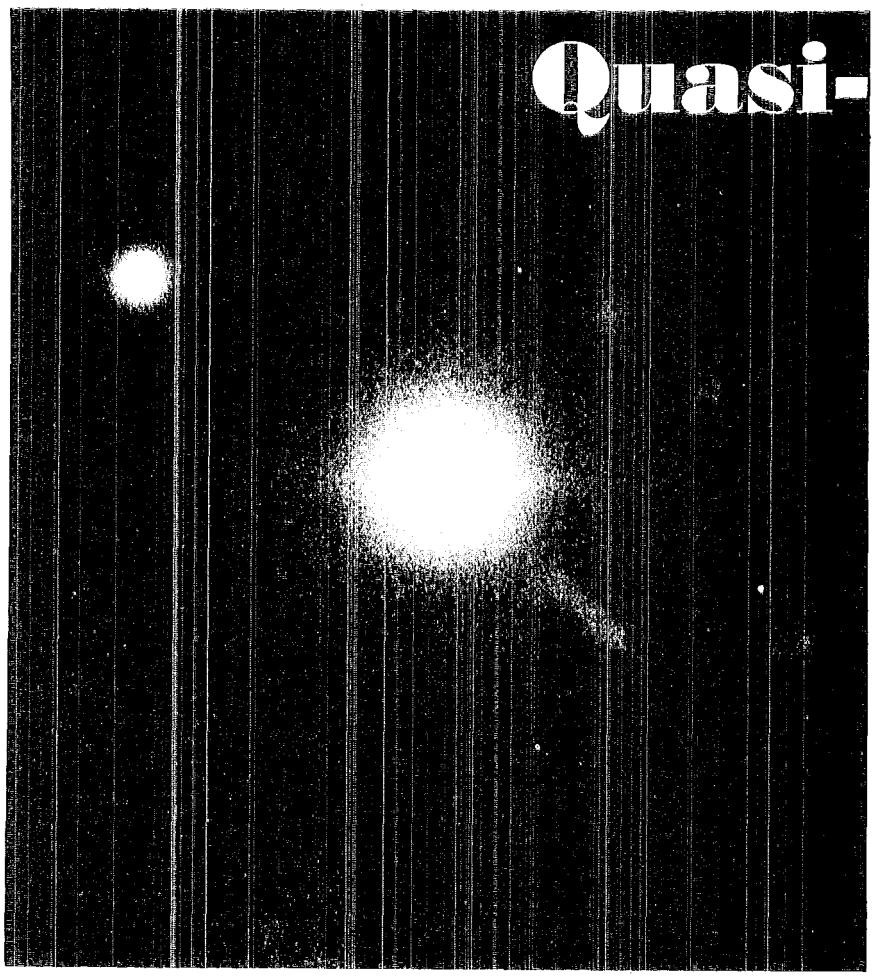
Office: D-413 Administration Building. Telephone: 7-6102. Printed by The University of New Mexico Printing Plant, Albuquerque.

COVER:

Our cover for December is the galaxy, Centaurus A, photographed from the Mount Wilson and Palomar Observatories with a 200-inch lens. The dark band is thought to be a dust cloud. James Terrell, a P division staff member who has been doing theoretical studies on quasi-stellar objects, thinks the objects may be fragments emitted from galaxies such as this in which an explosion is believed to have occurred. Terrell's theory is explained in better detail beginning on page one.

The Mysterious Quasi-Stellar Objects

-problem and key to secrets of the universe



3C 273 is one of the earliest quasi-stellar objects discovered. According to James Terrell, it is the brightest of the known objects. Note the appendage at its lower right. The photograph is from Mount Wilson and Palomar Observatories.

Terrell looks over his most recent of several publications on quasars.

By Ken Johnson

"Red shift" is a term used by astronomers to indicate a shift in light toward the red end of the spectrum. In 1963 it made clear for the first time that quasi-stellar objects—sometimes called quasars—are not stars, because of large red shifts observed in their lights which are not common in starlight.

The "Hubble" law, named after Astronomer Edwin P. Hubble, which states that the red shifts of galaxies increase with distance, indicates that galaxies are receding from us and from one another as part of the general expansion of the universe. This yardstick has been adopted by some astronomers in developing their theories as to the distance of quasars from the earth. Through its use it has been generally assumed that the objects are of the tremendous distances of galaxies, although not all astronomers are in agreement.

James Terrell, a P division staff member at the Los Alamos Scientific Laboratory who has been engaged in theoretical studies of quasi-stellar objects since 1964, suggests the shift of light is probably due to the "Doppler" effect, named after Austrian Physicist Christian J. Doppler, which is the source of

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This Mount Wilson and Palomar Observatories photograph of Galaxy M-82 shows filaments of matter on the fringe areas being ejected from the galaxy's center, according to Terrell. He thinks quasars may also have been ejected from galaxies in which explosions are believed to have occurred.

Hubble's law. Accordingly, the faster a light source moves from an observer, the redder the light will be because the recessional speed stretches out the light waves. The longer light waves are at the red end of the spectrum. Thus, Terrell's theory is that the recession of quasars may be due to causes other than the expansion of the universe and that they may be comparatively local.

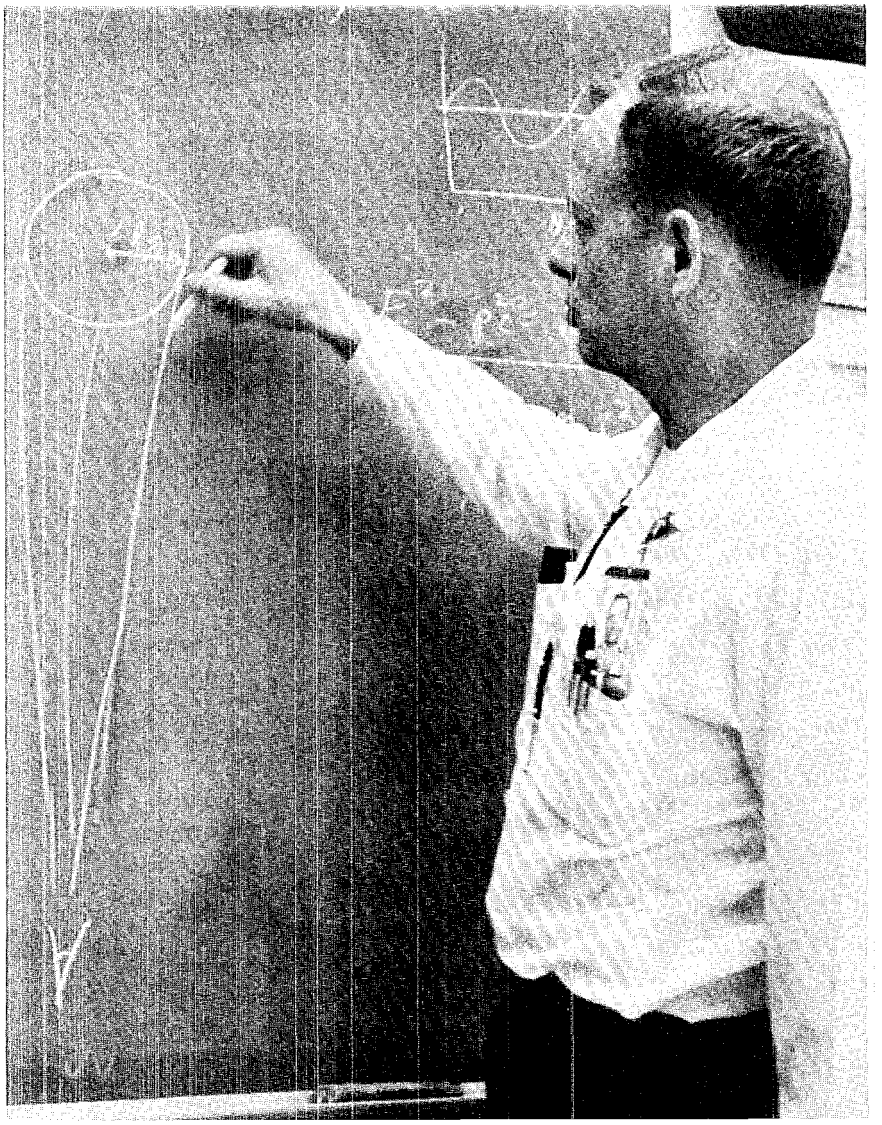
Terrell said there are more than 100 known quasars. He thinks they are probably fragments from an explosion that may have occurred in our own galaxy five to 10 million years ago.

Terrell defends his theory on the origin of the quasi-stellar objects on the basis of what has happened in other galaxies. "Lots of galaxies, like M-82 and Centaurus A, are believed to have had explosions at their centers and would very likely have emitted fragments. The objects would be moving away from us in such a case," he said.

Terrell said the red shift of 3C 273, one of the earliest quasars to be discovered, indicates a recession at the rate of 15 per cent the speed of light or about 27,000 miles per second. Some of the faster ones, he noted, have recessional speeds up to 82 per cent the speed of light or more than 152,000 miles per second. Even at these speeds the objects do not rush out of sight of the telescope. Said Terrell, "It's the same as if you could see car lights in Los Angeles from here through a telescope; those on the far side of the city wouldn't look any different than those on the near side."

Some of the faster of these recently discovered celestial objects have wavelengths 3.2 times greater than a normal star and are much brighter than the sun. "Basically," he said, "they are astronomical objects that look like stars." But the difference is that stars do not have large red shifts, faint appendages or the strong, fluctuating radio signals that have been emitted by some quasars.

Terrell theorizes that these objects may be relatively near the earth, "on the order of a million light-years" (one light-year is equal to 5,878,000,000,000 miles).



Quasars must be relatively small, Terrell explained, since their light fluctuates rapidly. If it were a large object changes in brightness would "be smeared out in time," he said.

He also believes that the quasars are much smaller than originally thought, a belief that is no longer strongly argued. "There are radical changes in brightness and radio strength within a year," he said. He contends that these changes in brightness must necessarily result from a small surface. "The light of a large surface," he said, "will not fluctuate rapidly as these are doing, because an object of fairly large size will have parts of its surface at different distances from us. Since light doesn't travel at infinite speed, the apparent speed of changes in brightness of a large surface will be smeared out in time."

Additional information may be forthcoming through observations of "proper motion." Proper motion is motion that is relative to known coordinates. By studying the motion of a quasar in relation to stars whose positions in the sky are

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Quasars . . .

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known, a "reference frame," not appearing to move, can be photographed and any change in position of the quasar within that frame could give an indication of distance. "3C 273 showed up on photoplates 75 years ago," Terrell said. "We can measure its proper motion over these years."

The staff member said that the farther away a quasar is, the less detectable its proper motion becomes. The motion of 3C 273 lies between zero and 1/100 of a second of arc per year. One second of arc is equal to 1/3,600 of one degree. To some astronomers this would mean that the quasar is at least 10 million light-years away. But to Terrell, this amount of motion means that the objects can be a few hundred thousand light-years from the earth.

If it turns out that quasars are relatively close to the earth, it will be easier to create a "model" or physical description than if they are at extreme distances. "The objects may be like massive stars and, on the basis of the local model, the source of energy could be the same as that of ordinary stars—nuclear reactions," Terrell said.

Terrell's theory on quasars is not the only one available, but it is holding its own among several others whose subscribers haven't been able to prove theirs are any better.

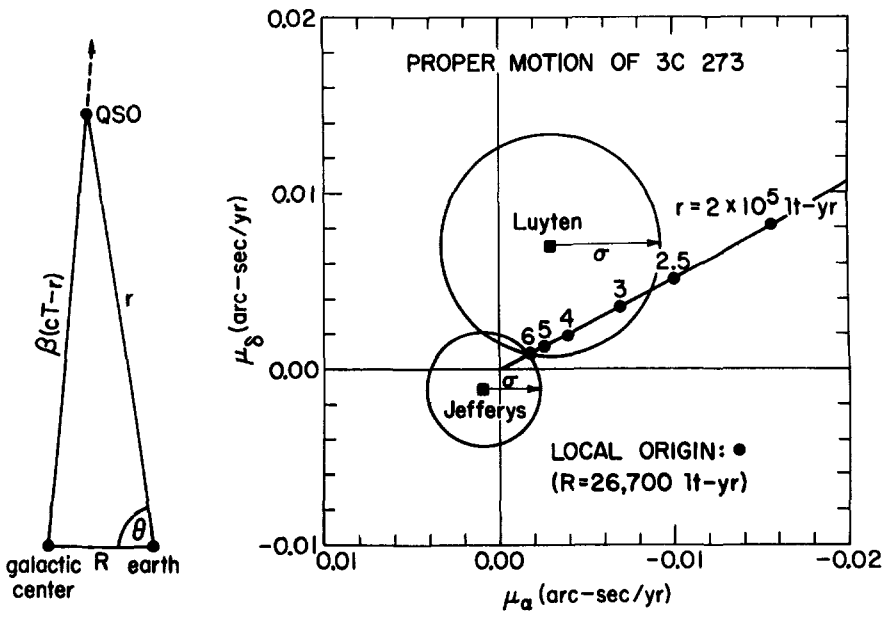
There is, for example, the "Collapsing Cloud Theory," whose proponents say that a gas cloud, weighing billions of times as much as the sun, collapses under its own gravity, condenses and forms either giant stars or smaller fragments. The red shift, they say, is cosmological, and energy is partly nuclear because of collisions or other interactions between fragments.

The "Neutron Star Theory" is that the quasar consists of a gas cloud in the midst of a large group of super-condensed "neutron" stars, each of which might be compressed into a volume only a mile or two across. Red shift is explained as gravitational, and not due to speed of recession.

The "Galactic Flare Theory" suggests that quasars are equivalent to gigantic solar flares which are developed by instabilities in a gas cloud of galactic dimensions, contracting in a hypothetical intergalactic magnetic field. Particles accelerated in this way are said to be responsible for the quasar's radiation.

Terrell's idea of the origin of the quasi-stellar objects has been called the "Local Explosion Theory." It and the others have developed since 1963 when Maarten Schmidt, professor of astronomy at the California Institute of Technology, discovered red shifts in quasars. Schmidt's discovery came about three years after Thomas A. Matthews and Allan Sandage, also of the California Institute of Technology, discovered the first of the quasi-stellar objects. Sandage announced the stellar nature of radio sources at the 107th meeting of the American Astronomical Society in December of 1960.

Quasars present one of the biggest problems in astronomy today. When those who concern themselves with them are agreed on what they are, where they are and where they came from, some of the earth's secrets, millions of years past, might become known. "Quasars may tell us something about the universe and our own galaxy. They could tell us how physical laws operate, what is happening at the center of our galaxy and, the history of the earth in the past few million years," Terrell concluded.



The proper motion of 3C 273 is illustrated as measured by Astronomers Luyten and Jefferys, and as would be expected if the object had been ejected from the galactic center for various observed distances. The circles represent estimated error. The illustration, by Terrell, was reproduced by D-8 and was originally used in Physical Review Letters, Vol. 21, No. 9, p. 637.

Pinocchio, Silly Too, Hot Cell

LASL Science Museum
Los Alamos, N.M.
Gentlemen:

"It takes something quite impressive to make me want to sit down and peck out a thank you note to an impersonal 'scientific laboratory.' After settling down from a month's vacation in New Mexico, we decided the high spot was our visit to your science musuem. Many thanks from all of us, particularly to our guide who so kindly answered our many questions not only about the laboratory, but also about the town."

are most popular museum exhibits

By Kent Bulloch

Letters of appreciation aren't new to the LASL Science Museum and Exhibit Hall, but they are always well-received by the PUB-2 Community Relations staff as an endorsement of the Museum's success. Representing LASL to the general public can be challenging work, but is made easier through the written and verbal "feedback" from many Museum visitors.

But to achieve a possibly "more scientific" measurement of public reaction to the Museum, the staff conducted a month-long public opinion poll. Cards containing seven questions were distributed during August to any Museum visitor who wanted to enter his opinions. About 1,000 cards were eventually received through a deposit box in the Museum and by mail.

The questionnaire responses confirmed the optimism on the success of the Museum, and also provided a wealth of information and suggestions for future improvements.

The cold, hard facts of statistics, however, cannot capture the warmth and often the humor of many of the replies. The occasional youngsters who filled out cards naturally generated the most humor.

Names and spelling seemed to be a definite problem to the younger set. The Kiwi Reactor exhibit, for example, was often misnamed, including the comment, "I liked that miniature model of the milk can."

The ballistic case display on the Museum patio was a problem, resulting in such statements as, "atomic missols," and also "missles."

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Pinocchio, a LASL Museum device that demonstrates fission in a reactor through the use of table-tennis balls, was acclaimed to be the most popular exhibit as a result of a recent public opinion poll. Watching the device operate is a group of Los Alamos Brownie Scouts. Conducting the tour is Kent Bulloch, left.

. . . Museum Exhibits

continued from preceding page

One visitor might have been of Russian origin, since he listed his favorite display as "the one where the atoms were popking."

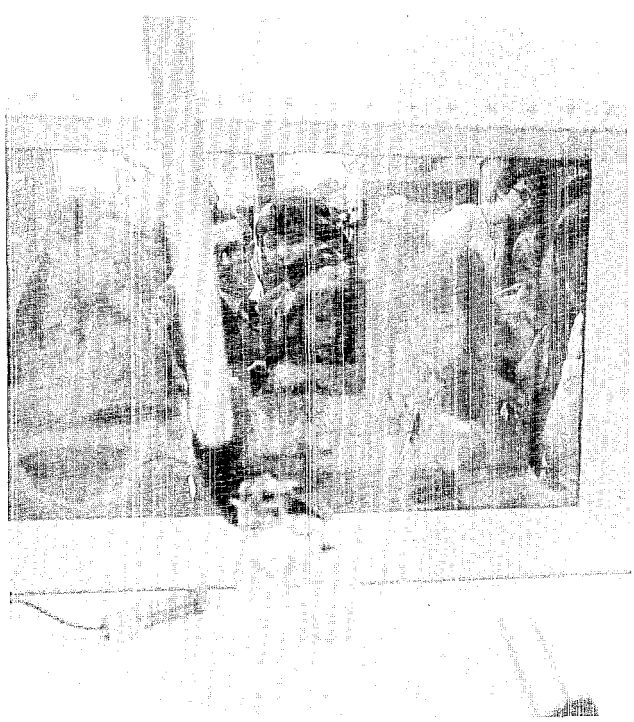
A variety of new gadgets was suggested for the Museum, spanning all levels of technology. One suggestion was a "proton neutrino detection exhibit," and another decisively stated: "This is the nicest museum I've ever been through, but YOU NEED A COKE MACHINE."

Respondents usually had definite ideas on their likes and dislikes. The most popular exhibits by far were the action displays, or at least the noisy ones. Some of the respondents were less decisive: "I'll have to come back and look a little closer," was one answer. The question, "which exhibits did you not understand," was apparently objectionable to one respondent who commented with only a terse "Well!"

Surprisingly, many persons listed that their favorite exhibit was "the guide." This might be explained by the fact that the majority of the guides are of the fairer sex. Comments on the guides included, "The tour was very interesting and the guide should have a raise—she is wonderful!", and also "The young lady who guided the tour is exceptionally personable and well-informed." A woman whose husband worked at Los Alamos during the war years asked the question, "Where in the world do you find these intelligent women to give the tours?"

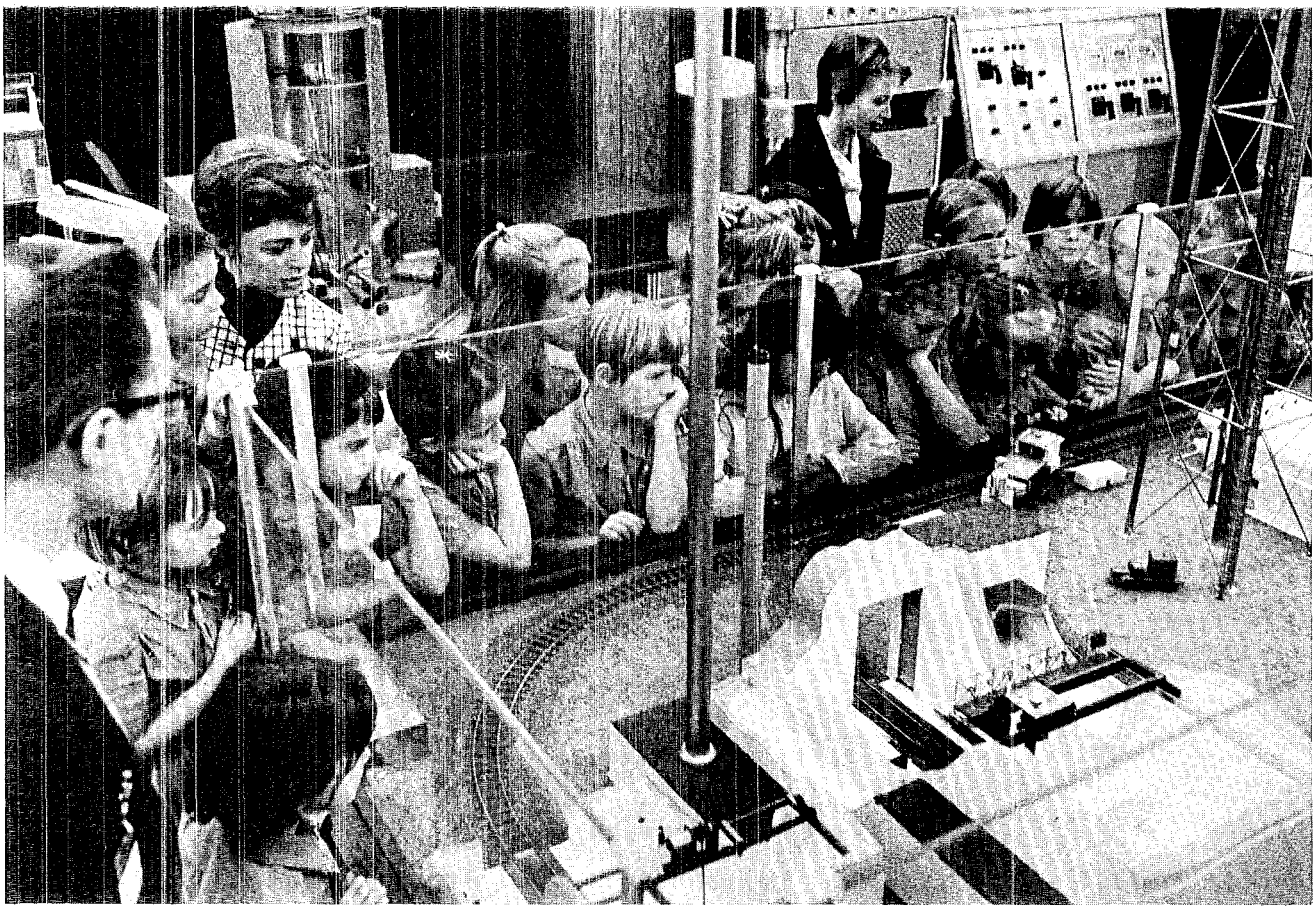
In the poll, respondents were asked their opinion on the public display of atomic weapons. The result was a practically unanimous endorsement of their being displayed. The largest segment of the comments used words such as "great, wonderful, terrific, or excellent." Another popular theme to the answers was, "They are part of our history; it won't do any good to hide them," and also: "They're part of history—Let's Hope!"

Many persons also voiced a hope that eventual elimination of atomic weapons and conflict in the world might be speeded by public displays which "drive home" the realities, and the facts of atomic weaponry.



The Hot Cell was third on the list of public favorites among museum exhibits.

The second most-popular museum exhibit was Silly Too which demonstrates the forces of magnetic fields as they are used in Project Sherwood.



The electric train in the Rover Exhibit was a point of interest to the Brownie Scouts on their recent tour of the Laboratory Museum.

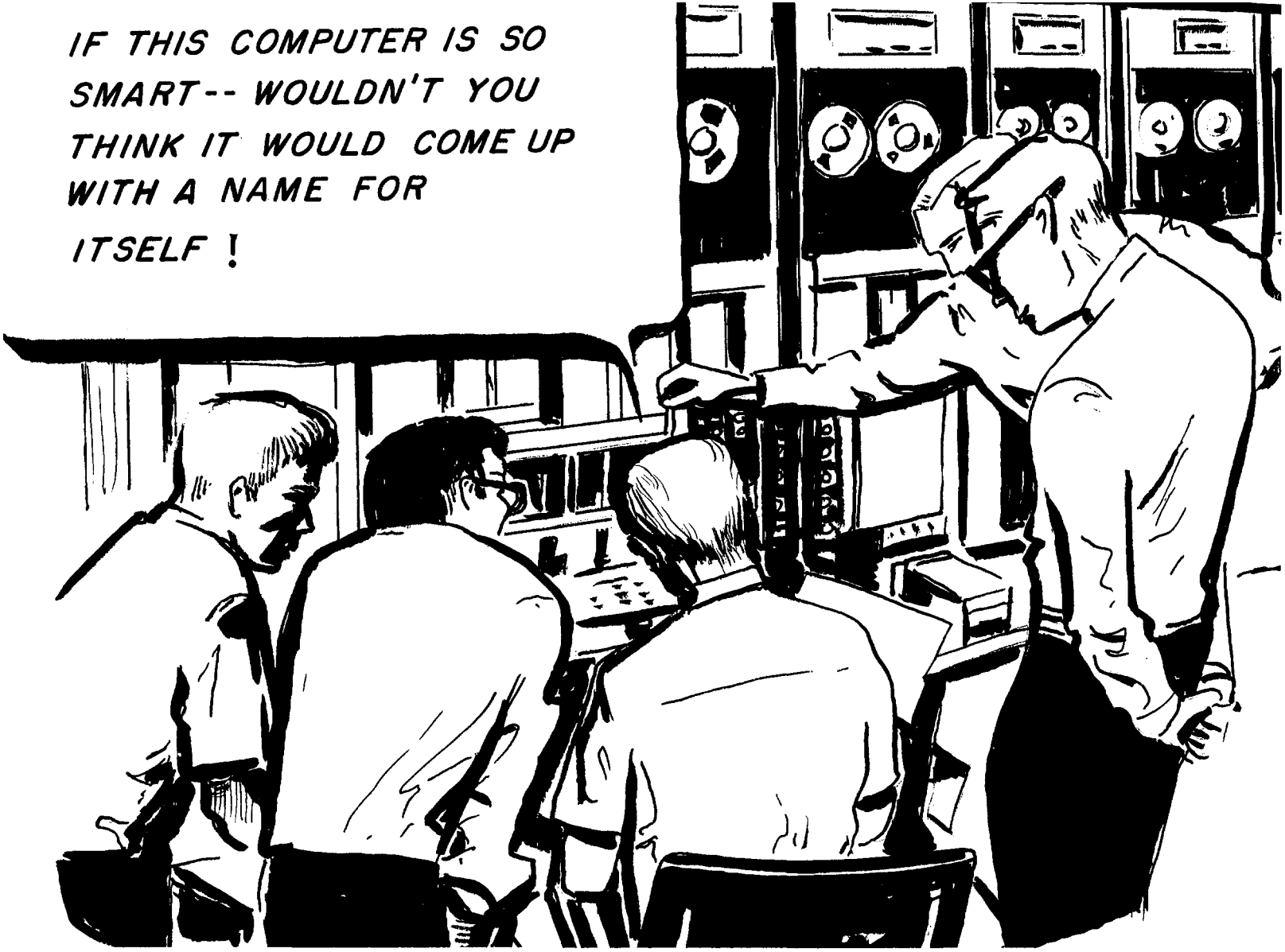
One of the more unique comments on weapons stated, "Very grateful for display of Fat Man—it saved my life in World War II. Thanks Los Alamos."

An overall appreciation of LASL also seems to be definitely gained by Museum visitors in view of numerous comments such as, "It's good to know our tax dollars help," and still more emphatic: "Your work here at Los Alamos makes me proud of my country."

The opinion poll has provided the Museum staff with a more accurate appraisal of visitor interests and reactions. Information has been compiled from the poll on such varied subjects as visitors' geographic distribution, favorite exhibits, individual opinions and suggestions. It should serve well as a guide to future additions and changes.

Concerning present exhibits, the poll listed Pinocchio, the device that demonstrates fission in a reactor through the use of table-tennis balls, as the most popular exhibit. The exhibit was chosen by 15.9 per cent of the respondents. Over 20 per cent of the respondents stated they liked all the exhibits. The next most-popular exhibits were: Silly Too, 11.2 per cent (demonstrates the forces of magnetic fields as they are used in Project Sherwood), the mechanical manipulator and "hot cell," 10.4 per cent, the Kiwi model, 8.1 per cent, and the weapons display, 6.8 per cent. The remaining responses were fairly evenly distributed among practically every exhibit in the Museum.

Visitors were also asked which exhibits they did not like, or did not understand. Seventy-nine per cent stated "none" or left the space blank. The exhibit receiving the highest percentage on this question was Silly Too, but amounted to only 2.3 per cent of the responses.



Burrowing Mammals, Fish, Birds, Colors, Alcoholic Drinks, Beverages and Hand Tools

From the very beginning of the atomic energy program in the United States, code names and nicknames have permeated the vocabulary of all associated activities. Starting with the first coined term, the Manhattan Project, the lists of names used to either hide or simplify atomic energy activities have grown to an enormous size.

According to Les Redman, D-6 group leader at the Los Alamos Scientific Laboratory, the difference between the two types of names is: "A code name is an unclassified designator used to refer to something essentially classified. A nickname is usually an affectionate term for a familiar object, some aspects of which are classified. For a nickname, because both classified and unclassified information is involved, the issuance of classification guidance is required. Since everything about

what a code word refers to is classified, no guidance is needed."

Nuclear tests have given rise to no small part of the repository of nicknames, many of them originating at LASL. Names for these tests are selected arbitrarily to give an easily recognizable name to a classified or complex object or event.

Designators such as these originate in a variety of ways. At LASL, for example, the development of the first underground test series in 1961 resulted in the seemingly appropriate use of names of burrowing mammals.

Redman said a list of common mammals was developed, but many were eliminated in the review process because they had been used previously. It was a challenge to overcome this obstacle, Redman said, so he borrowed a few zoology texts to find names of unusual burrowing mammals. Names eventually assigned to the test series included those of such mammals as Bandicoot, Bobac, Aardvark and others. These indeed proved sufficiently obscure to avoid previous use, although Redman admits that some of the "burrowing" mammals may have "only dug an occasional hole in the ground for one purpose or another."

Obscurity, however, is not the basic requirement for selecting nicknames. According to Redman, the important thing is that such names have not been used before. This presents a formidable problem since countless names have already been used for a variety of purposes. The Navy, for example, has exhausted a huge storehouse of names in commissioning their vessels. Basically, the Navy chooses the names of states for battleships, cities for cruisers, individuals for destroyers, fish for submarines, birds for mine sweepers, stars for fleet tenders, American leaders for missile submarines and famous ships and battles for carriers.

Selection of names is also dependent on the agency involved. The Atomic Energy Commission and the Department of Defense operate on entirely different sets of rules according to Redman. The AEC uses only one word code names and nicknames; the DOD uses one word for code names and two words for nicknames.

The DOD changes some of its nicknames annually; the AEC never does, unless something is compromised. In addition, the DOD picks words from lists made up by the Joint Chiefs of Staff while AEC contractors compile their own.

Code words are arbitrarily developed without any discernible pattern of thought, and then are assigned in an equally obscure manner to classified meanings. Code names of top LASL members during the war years are good examples: Niels Bohr was named "Nick Baker," and Enrico Fermi was "Henry Farmer."

The office of the Joint Chiefs of Staff ultimately reviews both code names and nicknames to make sure the names haven't been used before. According to Bob Krohn, alternate D-6 group leader, a list is first sent to the Albuquerque Operations Office of the AEC, which in turn sends them to the Division of Military Application at AEC headquarters. The DMA coordinates them with the Department of Defense.

Redman said the AEC has very few code names. These are principally assigned to materials. For LASL, both code word and nickname lists are thought up mostly by Redman and Krohn. Lists developed elsewhere are also channeled through D-6 for consideration and action. An example is Charles Browne of J-DO, who spent one weekend with his wife's cookbooks putting together a list of condiments. The list has recently been given final approval.

Nicknames are assigned not only to devices but also to events. This procedure is used to prevent compromising the name of a device by association with any particular nuclear test. Events were formerly referred to by the names of the test devices themselves. But by testing a stockpile weapon under its own name, its yield could easily be compromised through a visual estimate of the blast. In atmospheric tests, an experienced observer can accurately determine the size of the device by the size of the fireball and cloud, Redman said.

Categories used by LASL in nuclear tests have developed in the following order: burrowing mammals, fish, birds, colors, alcoholic drinks and beverages, and finally, hand tools (the current series). In addition, the recently approved list of condiments is ready for use and another list has been approved which uses Spanish first names. The Spanish name list includes about 500 masculine names; feminine names in Spanish are largely developed from the masculine form. Of these, only a fraction can ultimately be used; many are too similar to each other. Krohn said that of the lists developed at LASL and sent in for approval, only about 30 per cent of the names are found acceptable. A list of names of dogs has also been developed, Krohn said, but hasn't been used yet. Each list requires the final acceptance by the divisions of the Laboratory involved in their use.

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Code Names . . .

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Lawrence Radiation Laboratory name lists for nuclear tests started out with mountains of the world, and then went to rivers. These lasted many years, beginning in about 1958, and continued into the mid-1960s. Since then, categories have included fabrics, golf terminology and old cars. Examples include: Cashmere and Wool, Backswing and Hook, and Templar and Clymer.

Earlier categories used at LASL have included names of famous physicists (used in 1957-58), New Mexico counties and small towns. This has been the extent of primary categories used by LASL according to Redman.

A variety of names have been assigned to other types of devices at LASL. These include critical assemblies and reactors. Clementine was taken from the song of that name, since the device was located in a canyon and used plutonium, called "49."

Godiva was another named in a descriptive fashion, since it was being developed to determine the "bare critical mass." Jezebel followed in an almost logical manner, since the device was expected to operate in an exceedingly difficult manner—just like its namesake.

Topsy, the first critical assembly, was so named because it "just grew," and Little Eva immediately followed it.

The configuration of Flattop stimulated that name, since it had a large flat upper surface. Comet was designed by LASL's Jano Haley; Zepo was an acronym for "zero power" and was used for all neutronic mockups of Rover reactors. Honeycomb was descriptive of its physical structure, and Aquarium received its name because it was immersed in a water bath.

Other gadgetry given names at LASL includes weapon initiators and high explosive implosion assemblies. Some early weapons had names based on Norse mythology, such as Thor and Brok. Gun-assembled weapons had a class of names based on an extension of the Little Boy. After the Little Boy (LB) came LC (pronounced Elsie). Little Dell (LD) and Little Edward (LE) followed. Little Edward was named for the prominent man who proposed it.

Pits for nuclear weapons were originally given the last two numbers of the current year, but the rate of development became greater than one per year, and since then they have simply been numbered consecutively.

The Rover reactors have been named for birds. First came the Kiwi, and then the Phoebe. Phoebe had already been used elsewhere, however, so the name was altered to Phoebus (Apollo).

Several LASL site designations also derived their names in a similar fashion. At Kappa Site, the installations were named Eenie, Meenie, Minie, Moe and Lower Slobbovia (named for its isolation).

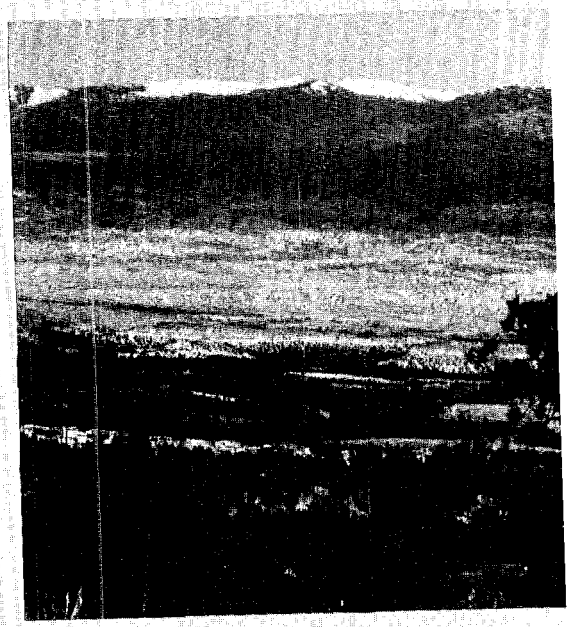
Buildings in the old LASL technical area were lettered first in English, then in Greek. Both Alphabets were eventually exhausted, and the final designation was Omega. As a matter of historical interest, early staff member meetings and colloquiums were conducted in Delta building (Delta is usually used to denote an increase—learning in this case). Technical areas were also originally given letter designations, using both the English and Greek alphabets, but the system wasn't entirely uniform. In some cases historic names intervened, such as the sites built at Anchor Ranch and Two Mile Mesa.

Ten Site, was named after the group located there—CMR-10. The letters "CMR" stood for chemistry, metallurgy, and the "R" was either for refractories or research, but this was never entirely agreed upon.

Divisions in the Laboratory originally had single letter designations, like "G" for gadgets, "M" for implosion, "X" for explosives, "F" for Fermi and "T" for theoretical. Reorganization and other changes have led to combinations of these letters, and sometimes it has simply been the use of the next unused letter in the alphabet, such as the present "J," "K" and "N" divisions.

Through the years, the task of developing and assigning names for use by the Laboratory has fallen to group D-6 (the D stands for documentary). For this reason, along with a number of still-classified reasons, D-6 has frequently been dubbed the "solvers of strange problems."

Principally involved in this unusual but highly-necessary function are Redman and Krohn. Both have the experience for the task, not only from an inherent fascination with the activity, but also from many years association with the atomic energy program. Redman has a background in chemistry and worked on the Manhattan Project at MIT during the war years, before coming to Los Alamos. Krohn arrived in Los Alamos at the very beginning, April, 1943. A physicist, he had worked on the Manhattan Project at the University of Wisconsin before coming to Los Alamos.



The Rio Grande Valley

A Difference of Eight Years

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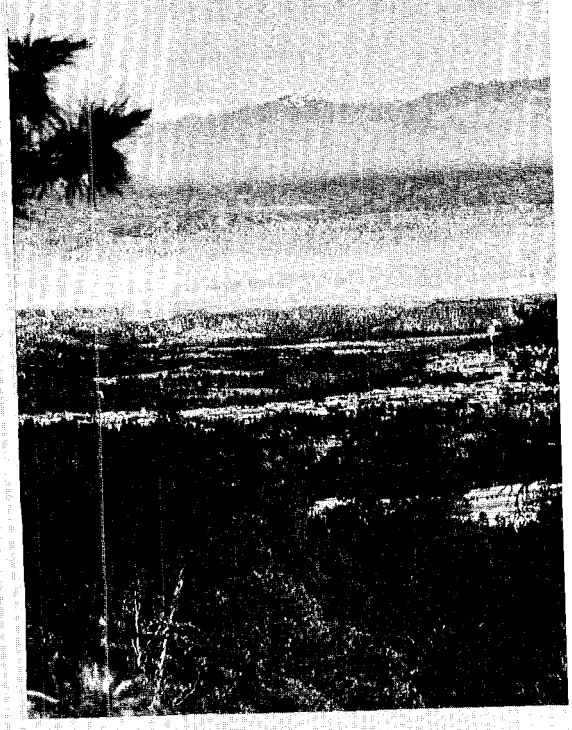

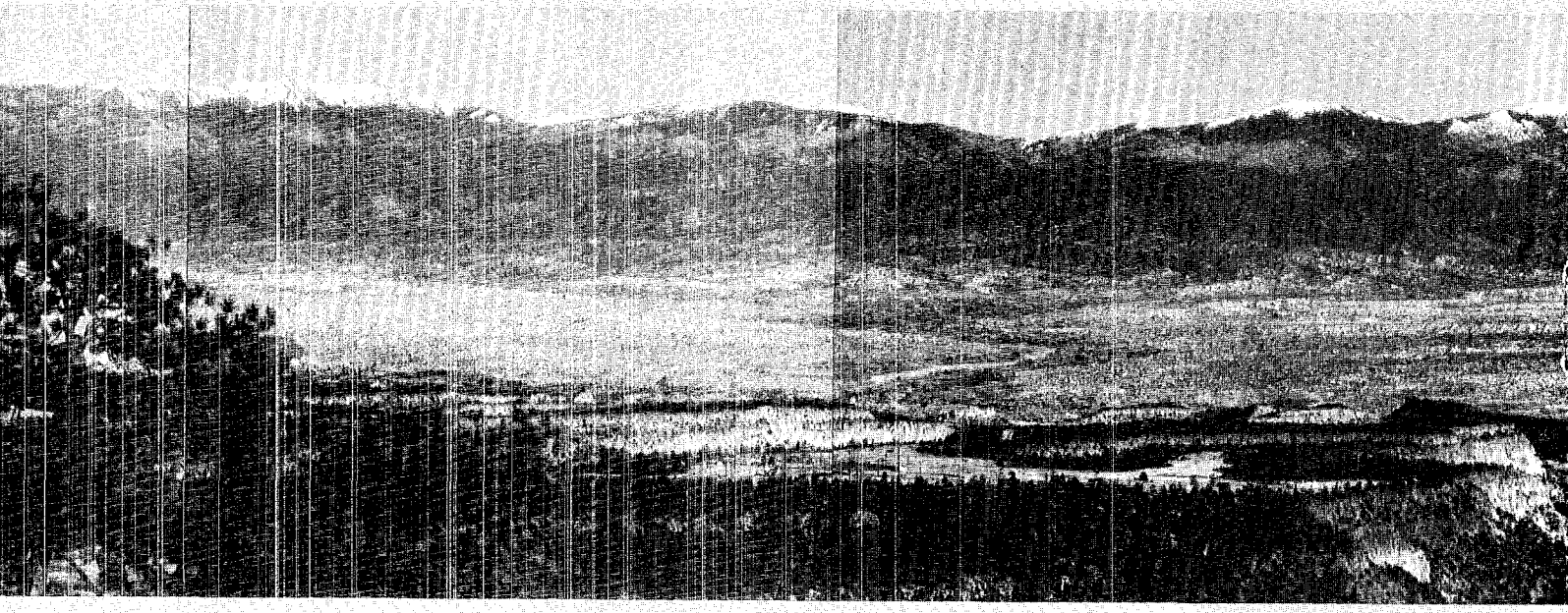

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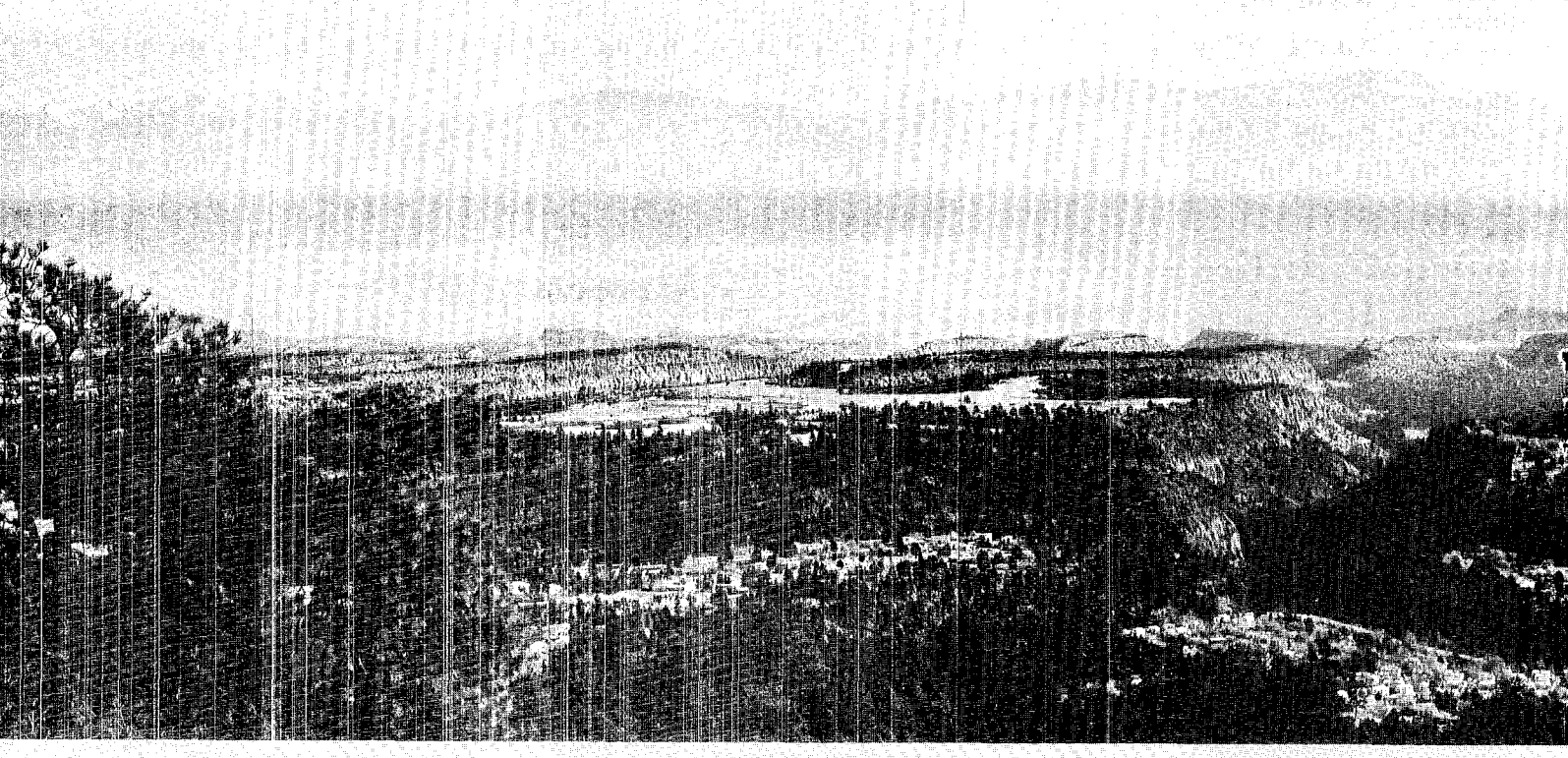

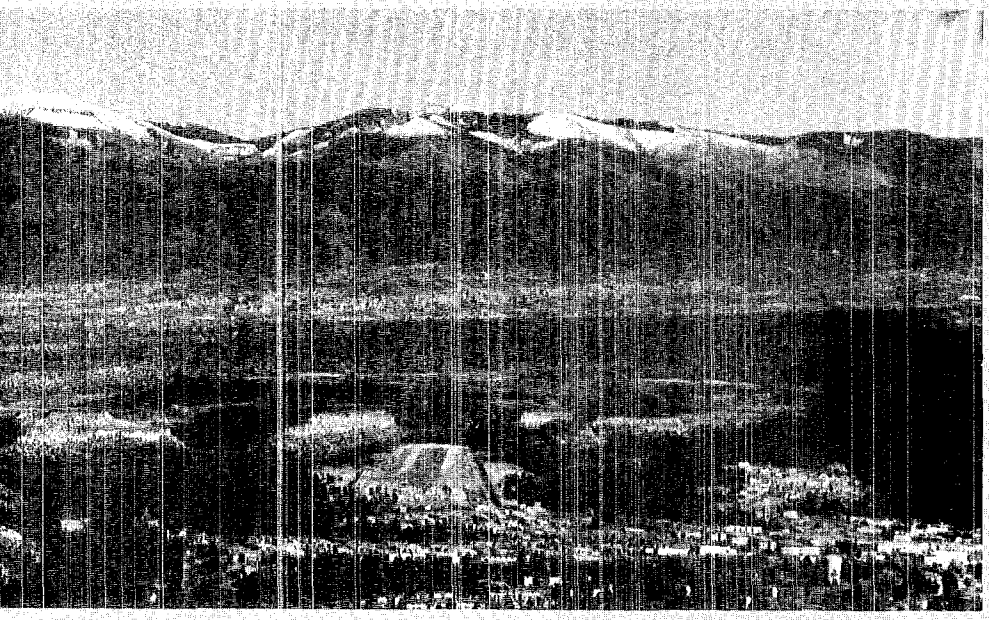

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excellent canopy,
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firmament,
this majestical roof
fretted with
golden fire, why,
it appears
no other thing
to me than
a foul and pestilent
congregation of
vapours.
—Shakespeare
Hamlet, II, 2

Photos by Bill Regan

Thousands of pieces of LASL literature are mailed each year in response to hundreds of mail inquiries. Here are just a few of the most

Loaded Letters

"I looked cobalt-bomb up in our encyclopedias and found that scientists had never made such a bomb. So I thought I would try to make this bomb for a project. I plan to do this by adding Cobalt to the chemicals in a hydrogen bomb. I had to tell someone about this project because I thought it might be too big to handle. I hope you will write me and give me some advice on how to go about it and how to make it safe as possible."

This was probably one of the most unusual letters ever received at Los Alamos Scientific Laboratory, but isn't the only surprise that has been pulled out of an envelope.

In response to hundreds of mail inquiries each year, PUB-1—as the public information group is commonly called—sends replies, accompanied by thousands of pieces of LASL literature.

Under a long-time standing rule, all inquiries of the Laboratory—no matter how vague the messages; how crudely they are written; or what they are written on—are answered.

By far, the most letters are received from students. The elementary student who has just been introduced to the atom, wants to know everything his picture book doesn't tell him about it. The high school student needs some help with his science fair project; and the college student wants information for a research paper or thesis.

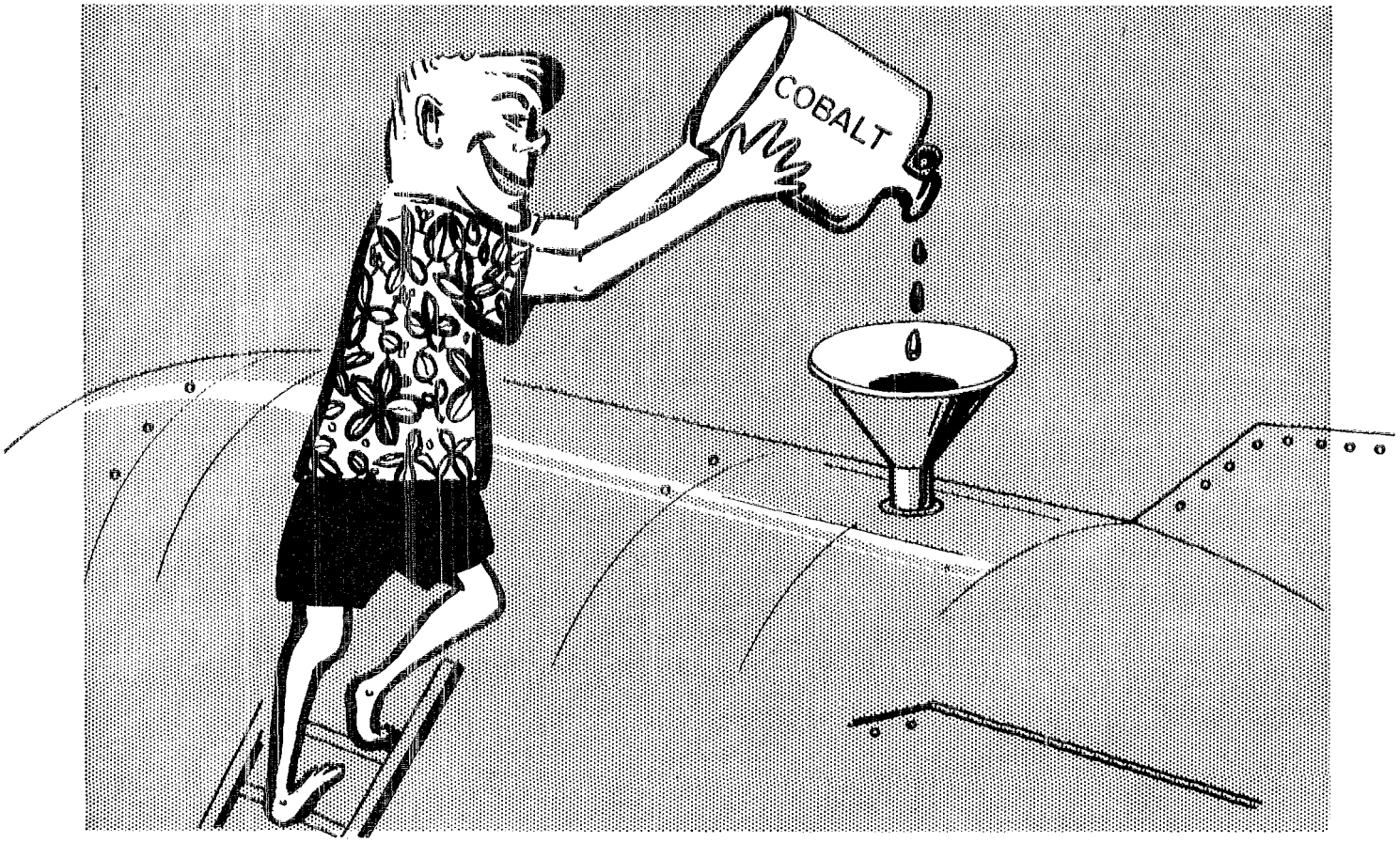
Not all inquiries are addressed to PUB-1 or even to the Laboratory, but this is where they eventually end up. Many are initially received by the Los Alamos Atomic Energy Commission area office, and the Los Alamos and Santa Fe Chambers of Commerce. Still others have been received by LASL employees who knew somebody who had an acquaintance who had a child who had to write a scientific term paper in school.

Although answering mail inquiries has become a routine job for PUB-1 staffers, there is nothing routine about how it is done. Each inquiry is different and so must each answer be different. What to say is sometimes a problem. In the case of the letter from the youngster in Megargel, Texas who wanted the necessary information to build a cobalt bomb, it was not only a problem in figuring out what to say, but also of saying it with all possible speed for fear that he might wipe his hometown off the map.

It was answered in this way:

"Your project is certainly one that is too big to handle by one individual—even one with many years of experience in scientific research. The only advice that the Los Alamos Scientific Laboratory can give you is DON'T ATTEMPT ANY CHEMICAL PROCEDURES OR MIX ANY CHEMICALS WITHOUT THE SUPERVISION OF YOUR SCIENCE TEACHER.

"Hydrogen in particular, is a dangerous gas to handle. Mixing chemicals just to see what will hap-



pen can result in quite a surprise—frequently a disastrous one for you and any bystanders who may be in the area. We cannot emphasize too much the necessity for caution and seeking advice and help from someone trained in science in general and chemistry in particular.

"Your early interest in research is commendable, but first concentrate on the necessary education and background to make it productive and SAFE."

Others ask for information that is scientific in nature, but does not correlate with any of the programs being conducted at LASL. In reply, suggested references are usually offered or the letter is forwarded to another agency that is more likely to have the information. This inquiry from Shreveport, Louisiana, for example, was forwarded to the Medical Center at the University of California for response:

"In my biology class I'm doing a project on lung cancer. Will you please send me all information concerning lung cancer?"

Some want information that can readily be found in almost any school or public library, and the possibility is usually suggested in the LASL reply. Take this request from a youngster in Whitesboro, New York for example:

"I request a chart showing the layers of rock beneath the earth's crust. Also I would like a chart showing the inner organs of the human body," or from Mentor, Ohio:

"I recently became interested in geology and started a small rock collection. I have been having trouble identifying certain rocks and minerals. It would be appreciated if any information on geology could be obtained."

Not all questions can be answered in as much detail as wanted, because of classification. Such was the case for an ambitious boy from Monticello, Mississippi:

"In connection with my research in nuclear propulsion I need to obtain the following information: The amount of radiation that is produced in each of the atomic rocket engines in the Nerva and Phoebus series and the percentage of each type of radiation.

"The main thing I need to know is how much radiation penetrates the reactor itself so that I may design other configurations using the same atomic engines with a adequately designed radiation shield. I already have enough data, such as formulas, to design shielding requirements at different radiation levels."

All too many requests are so vague or so broad in scope there is no easy answer for them. Here's one from a student in Ottawa, Ontario, Canada that might be answered in another 10 years if full time is devoted to the project:

"If there are any facts of scientific value that have occurred in the past ten years, would you be so kind as to inform me of them."

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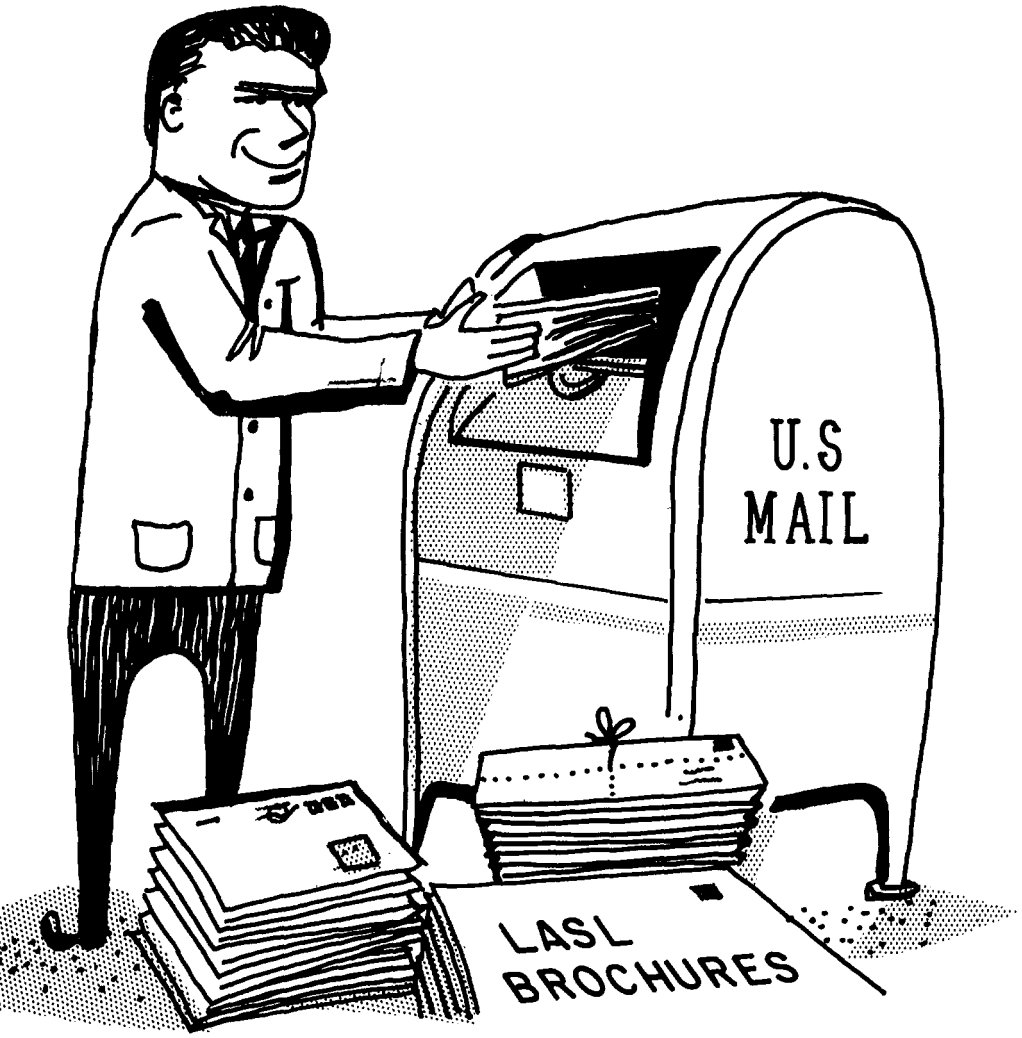

. . . Loaded Letters

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Rather than tear his hair out, a PUB-1 member sent some of the latest brochures on LASL programs in hopes of a major revolution in the student's thinking.

Some persons not only want answers to questions, but equipment as well. In this category was a letter from a Canton, Ohio youngster.:

"I am seeking information on the availability of dielectric mirrors. I am in the process of building a Helium-Neon Laser to operate at 1.5u and need a dielectric mirror for the output end of the laser.

"Since I am still in high school and short of funds, I would like to know if you would supply me with a mirror 15mm long and 16mm in diameter. I realize that this request is an imposition, but I have little recourse if I want to finish my laser and begin my research."

The reply, of course, stated that government property cannot be given away by LASL.

Another student asking for something other than publications was this one from Memphis, Tenn.:

"Could you please tell me where I can acquire a radioactive rodent? I am in desparate need of one for my science project."

More than likely the student chose another theme for his project after receiving the following reply:

"I am sorry, but it would be very difficult for you to obtain a radioactive rodent. The animal is given radioactive isotopes which can only be handled by a person having a license. The only possibility for your science project would be to locate someone with a license who might be able to supervise your project.

"I am enclosing three booklets I hope will be of help to you.

"Good luck."

The Laboratory also receives letters from abroad. Some of them in this category are very hard to answer because of a multitude of requests relating to things with which the Laboratory has no connection. This letter from Malaysia was perhaps among the toughest to answer:

"Please send me complete supplies of publications, pictures, wall charts and other materials free to me. I am a teacher, and these materials are very useful to me.

"Kindly add my name to your regular mailing lists to receive your news releases, magazines, publications and other materials free as they are released.

"Please also send cancelled postage stamps, science and mathematics books, experiments and projects books free to me.

"Please also ask the Lawrence Radiation Laboratory and other departments and laboratories of the University of California to send their regular mailing lists.

"If you can, please send classroom quantities of 50 of each title of your publications free to me."

This gentleman also asked for the same treatment for three of his associates and then closed his letter with a request for answers to several questions:

"What are the rules, regulations and coaching points of the various sports, games and physical exercises?

"What are the findings of the Warren Commission?

"What are the biographies of President Kennedy and his family, and other members of the Kennedy family?

What are the American ways of life and culture?

"What do we learn in nuclear science and related subjects?

"What is the history of mankind?

"What are the advances in the sciences, arts, mathematics, technology?

"What are the radiation hazards?

"What are the American history, geography, flora, fauna, industries, sports and etc.

"What is the source of human knowledge?"

The PUB-1 member that was appointed to attend to this scattering of thoughts must have had nightmares. He answered the letter in this way:

"I am sending copies of several publications which I hope you will find useful in your classes and which will serve to answer some of the questions you asked in your letter of August 29.

"Many of your requests and questions are simply impossible to comply with or to answer, and we suggest that you make use of the library facilities that are available in Malacca or Kuala Lumpur.

"I am sending copies of your letter to the Lawrence Radiation Laboratory and the Division of Technical Information, USAEC, in Oak Ridge, Tennessee. It is possible that those organizations have publications which would be of interest to you."

The stopper of stoppers was probably a postcard request from an English teacher in Radford, Virginia:

"Could you send me some free or inexpensive material on William Shakespeare or any of his plays. I will be teaching a unit on him the last of February."

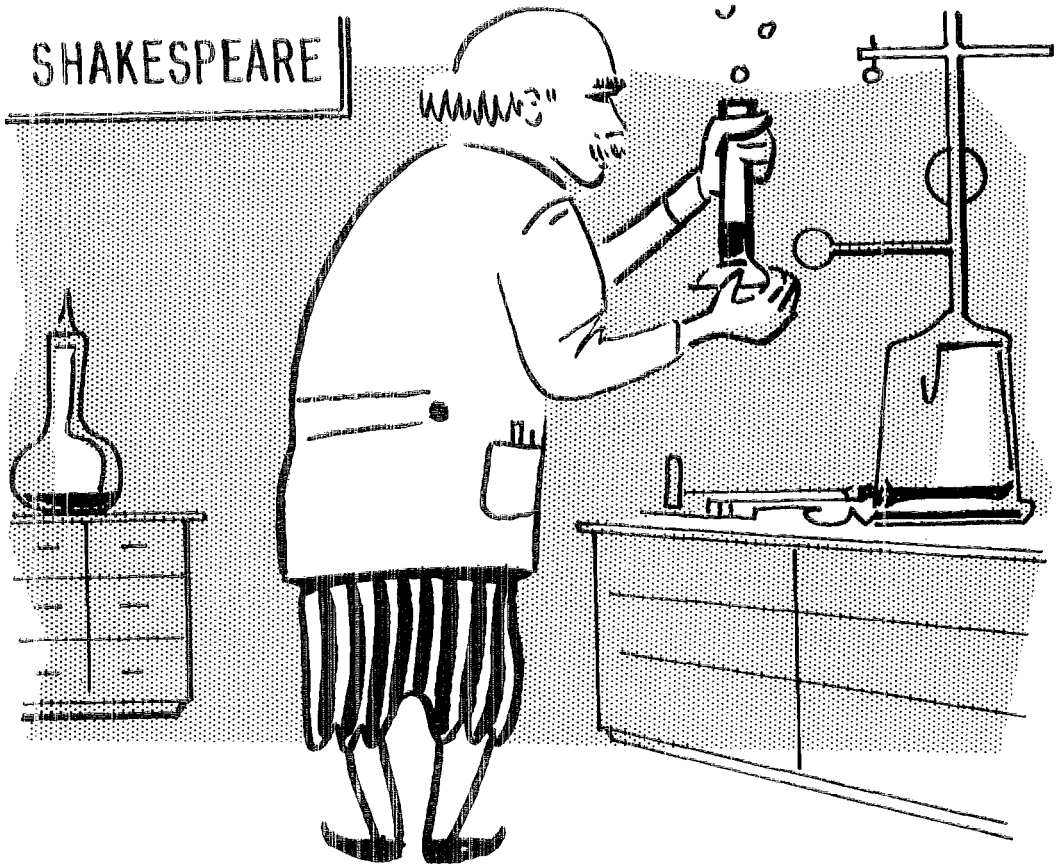
One member of PUB-1 jokingly suggested that the inquiry might be referred to the Weapons division.

Obviously, there is doubt as to whether some letters deserve answering. But the "ask a question—get an answer" policy doesn't discriminate.

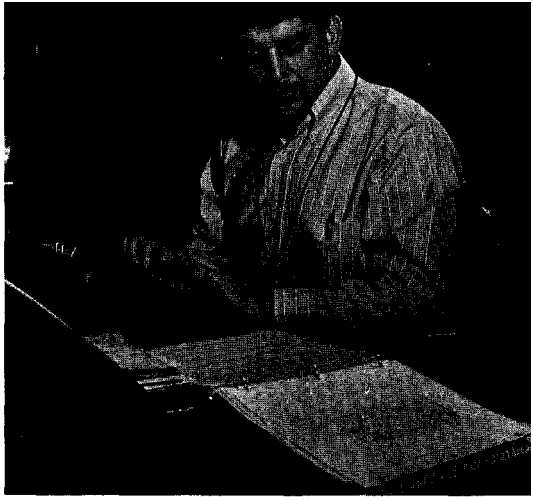
After the trembling subsided, a PUB-1 staffer typed this reply:

"The Los Alamos Scientific Laboratory is operated by the University of California for the U.S. Atomic Energy Commission. In addition to programs of research and development in military and peaceful uses of nuclear energy, the Laboratory carries on advanced fundamental research in the physical and life sciences.

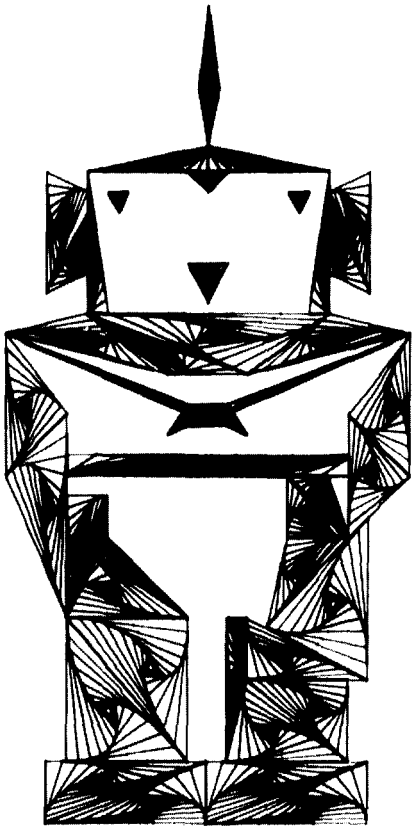
"We have no information in this office on William Shakespeare and his writings."



LASL'S Arty Computers



(Top): From the plotted coordinates of the Kachina Doll, Abad Sandoval punches the necessary computer cards. (Right): From a magnetic tape the image is formed on film.



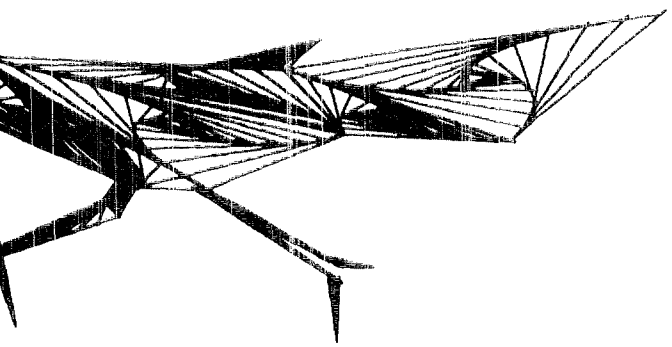
The Kachina Doll, graphically illustrated on a computer by Abad Sandoval, is made up of 49 triangles, each of which is divided into 10 equal parts.

The Kachina Doll, a small carved figure of a deified ancestral spirit that to the Hopi and other Pueblo Indians brings rain, can be illustrated in many ways. It is graphically illustrated by photographers and artists, and by a series of coordinates, a deck of computer cards, a magnetic tape and a film strip by those who work with computers.

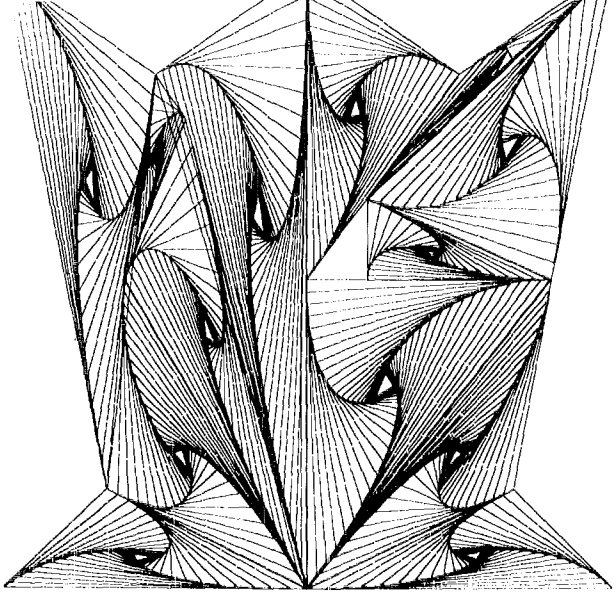
Abad E. Sandoval, an assistant supervisor in Group C-1, has programmed the Kachina Doll and other caricatures and designs on Laboratory computers. By doing so, he is not advocating the downfall of the artist's brush and easel, for the computer illustrations are used as test patterns in checking out camera systems, much the same as the television viewer would use one in adjusting his set for the best possible picture. They also help to simplify orientation lectures for visitors to the Laboratory's Central Computing Facility.

Howard Borer, a former LASL employee, originally programmed a triangle for these two purposes. Sandoval, a Laboratory employee for seven years, modified the program about a year and a half ago and has since come up with some interesting test patterns, including the Kachina Doll, Road Runner, a likeness of Batman (with one eye closed), and several other designs that would look good on wallpapers or fabrics.

Sandoval said that he first determines the coordinates of a caricature or design on graph paper. Computer cards are punched and the data are transferred onto a magnetic tape. From the tape the image is formed on film. For example, the Kachina Doll is made up of 49 coordinates which are represented on film by 49 triangles, each of which is divided into 10 equal parts by sweeping lines in either a clockwise or counter-clockwise direction or both. The computer's concept is unique in the field of art.

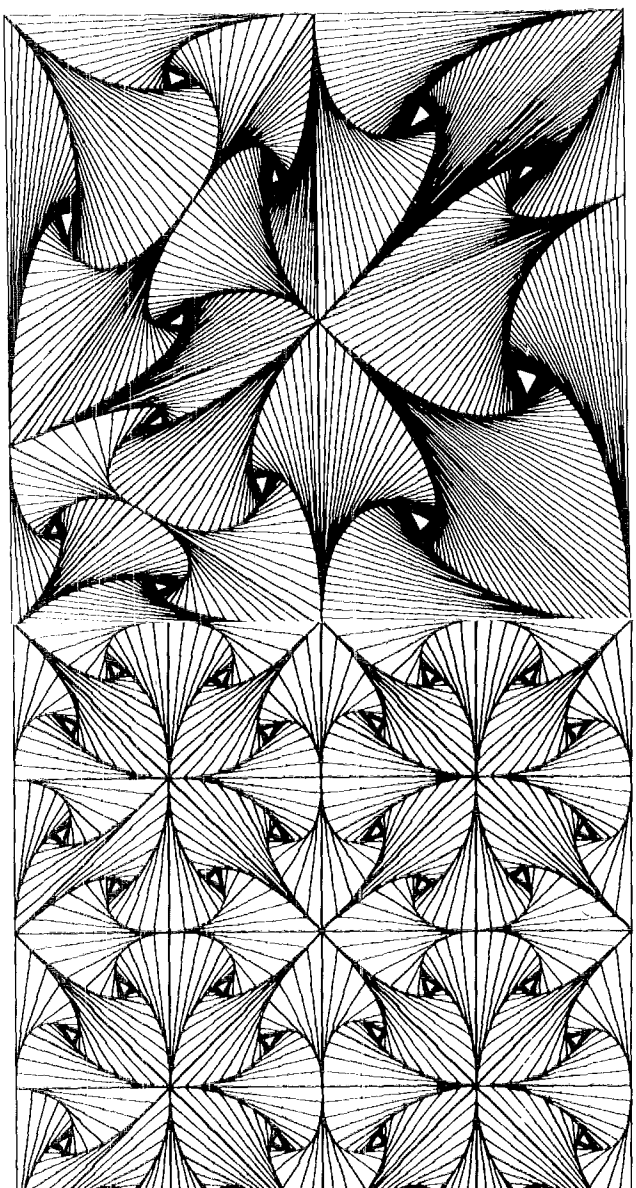


The computer-illustration of the Road Runner is made up of 21 triangles.

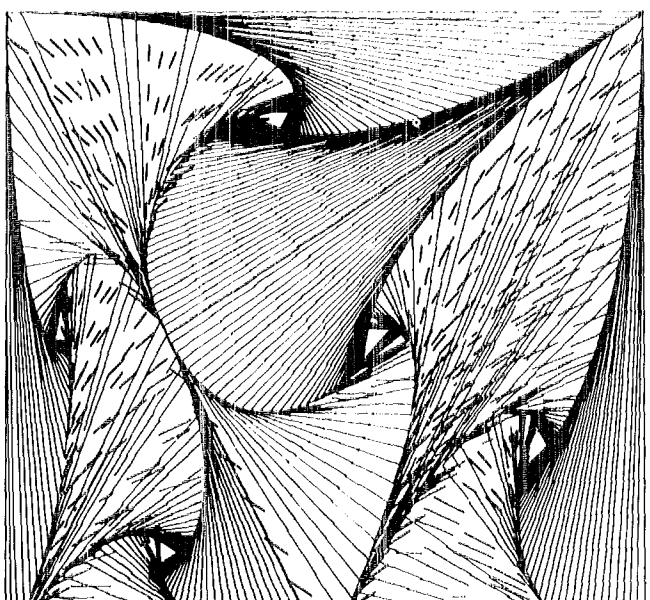


Sandoval said this is an illustration of Batman (with one eye closed).

Sweeping lines in both clockwise and counter-clockwise directions divide the triangles making up these designs into equal parts.



This test pattern indicated a camera malfunction, Sandoval said. He noted that the short, rod-like lines would not have been present in the test pattern if the camera had been operating normally, and other lines would have been straight and continuous.



short subjects

Mrs. Louise Bowen, SD-DO, is retiring after 25 years with the Laboratory. Twenty-three of those years were spent with the Shops department. She and her husband, Elmer, who retired last year, will continue to make their home in Los Alamos.

Curtis G. Chezem, a former LASL employee, has been appointed head of the Department of Nuclear Engineering at Kansas State University, Manhattan.

The department is one of the largest of its kind in the country. He is supervising a 13-member faculty and some 40 graduate and 92 undergraduate students.

Chezem, a physicist, was employed by W division in 1952 where he worked for three years and then left the Laboratory to work toward his Ph.D. He returned to LASL in 1957 and was employed by N division. He also served as a professor of nuclear engineering and physics at the Los Alamos Graduate Center.

Before accepting the Kansas appointment, effective Nov. 1, the physicist was a branch chief for the Atomic Energy Commission in Washington, D. C.

John E. Hockett, CMF-13, has accepted an invitation to serve as a member of the Honorary Editorial Advisory Board of the "International Journal of Mechanical Sciences." He has been a referee for the Journal and has had articles published in it.

Hockett is also a reviewer for the American Society of Metals' "Transactions Quarterly" and is a member of the ASM Transactions Committee.

Clyde J. Jirikowic, CMB-7, is retiring after 15 years with the Laboratory. He came to Los Alamos from Denver, Colo., and has worked in CMB-7 for the entire length of his employment. Mr. Jirikowic, and his wife, Laura, will be moving to an apartment in Albuquerque where they plan to spend the winter and make plans for the coming summer.

For those who are planning to forage the countryside for their own Christmas tree, permits are on sale by the Los Alamos branch of the U.S. Forest Service, located in the basement of the Atomic Energy Commission building.

Maps, provided with the permits, show three designated areas in the Jemez Ranger District where trees may be cut. Permits and maps are also available for the Espanola and Tesuque Ranger Districts.

Permits are $1 for trees from one to eight feet in length; $1.25 for those from eight to 16 feet, and $3 for those from 16 to 24 feet.

The Forest Service is providing permits through a cooperative agreement with the AEC. In previous years the permits were made available by the AEC.

James E. Reeves, manager of the Atomic Energy Commission's Nevada Operations Office, will retire effective Dec. 31.

Reeves has managed the Nevada office since it was instituted in 1962. He joined the AEC staff in Albuquerque in 1952 to participate in the weapons test program, and has been with that program since.

Robert E. Miller, deputy manager since May, has been named to succeed Reeves.

Lothar Nordheim, a LASL staff member from 1950 to 1952 and a consultant until June 30, 1967, has retired from his position of senior research advisor at Gulf General Atomic, San Diego, Calif.

Nordheim, 69, will continue as a consultant to Gulf General Atomic.

The director general of the International Atomic Energy Agency, **Sigvard A. Eklund,** visited the Los Alamos Scientific Laboratory in early November.

The primary purpose of Eklund's visit was to discuss the work in Nuclear Safeguards Research and Development being carried on at LASL under the direction of G. Robert Keepin, N-6 group leader.

As director general, Eklund supervises the activities of the 300-member professional staff of the international organization. The IAEA, headquartered in Vienna, Austria, has 98 members including the United States, Russia, the United Kingdom, France and China.

new hires

Accounting department

Belva J. Heath, Los Alamos, AO-DO

C division

Roger B. Beauchamp, Los Alamos, C-1
Jody L. Bergstein, Los Alamos, C-1
John B. Johnson, III, Los Alamos, C-1 (Casual Rehire)
Wanda M. Mantonya, Los Alamos, C-1 (Part Time)
Alfred E. Bruington, Los Alamos, C-7 (Casual)

CMB division

Joseph E. Wilson, Jr., Baton Rouge, La., CMB-1
Allan K. Murdock, Artesia, CMB-11

CMF division

Ramon Romero, El Porvenir, CMF-4

Director's office

Jose A. Roybal, El Rancho, ADP-SF

Engineering department

Barnett D. Bauer, Los Alamos, ENG-5 (Casual)

GMX division

Larry E. Hatler, Port Arthur, Texas, GMX-3
Gene F. Mortensen, Golden, Colo., GMX-3
Joseph C. Skalski, Jr., Albuquerque, GMX-3
John M. Christian, Renton, Wash., GMX-7
Fred W. Ochoa, Demming, GMX-7
Kenneth C. Spicochi, Los Alamos, GMX-11 (Casual-Rehire)

H division

Lois M. Bustos, Santa Fe, H-1 (Rehire)
Arthur N. Morgan, III, Los Alamos, H-1

J division

Luella M. Watkins, Fargo N. Dak., J-DO
Judith A. Roebuck, Los Alamos, J-1 (Casual Rehire)
Michael R. Cates, Waco, Texas, J-12
Ida U. Kraig, Los Alamos, J-12 (Casual)
Thomas L. Cook, Abilene, Texas, J-14

K division

Douglas N. Rodgers, Evans, Pa., K-3
William L. Lentz, Sacramento, Calif., K-4
Buddy B. Utz, Wichita, Kans., K-4

MP division

Clifford E. Palmer, Los Alamos, MP-AE (Casual)

P division

David M. Yates, Waterloo, N.Y., P-1
Gilbert M. Pena, Nambe Pueblo, P-15

Personnel department

Betty M. Lea, Los Alamos, PER-1 (Casual Rehire)
Sharon A. O'Keefe, Santa Fe, PER-1 (Casual)
Belinda Romero, Santa Fe, PER-2 (Casual)

Public Relations

Roy W. Brent, Jr., Los Alamos, PUB-2 (Casual)
Joyce R. Miller, Los Alamos, PUB-2 (Rehire)

Shops department

Erich Baumgartner, Cleveland, Ohio, SD-1

Supply and Property department

Teresa E. Baca, Los Alamos, SP-DO
Frank A. Brady, Santa Fe, SP-3
Albert Trujillo, Albuquerque, SP-3

T division

Charlotte W. Cole, Santa Fe, T-2 (Casual Rehire)
Charles T. Grant, Brooklyn, N.Y., T-9

The Technical Side

Presentation at XXII International Congress of Pure and Applied Chemistry and XII International Conference of Coordination Chemistry, Sydney, Australia, Aug. 20-27:

"Unusual Valence Stabilization and Coordination in Fluoride Complexes of Actinide Elements" by T. K. Keenan, L. B. Asprey, and R. A. Penneman, all CMF-4

Presentation at meeting of the Northeast Texas Chapter of the Health Physics Society, Fort Worth, Texas, Sept. 30.

"The Problem of Large Area Contamination with Radioactive Materials" by W. H. Langham, H-4 (invited talk)

Presentation at British Nuclear Energy Society, London, England, Oct. 2:

"Nuclear Propulsion for Space" by R. E. Schreiber, Dir. Off. (invited talk)

Presentation at Rocky Mountain Chapter, Health Physics Society Meeting, Albuquerque, Oct. 4:

"Criticality Accident Dosimetry" by D. E. Hankins, H-1

"Some Considerations of Reactor Accident Frequencies" by J. W. Healy, H-1

Presentation at Fall Symposium on Control of Tritium Hazards, National Bureau of Standards, Gaithersburg, Md., Oct. 5:

"Early History and Health Physics of Tritium Hazards" by W. H. Langham, H-4 (invited talk)

Presentation at 14th Annual Meeting, Bioassay and Analytical Chemistry, New York City, N.Y., Oct. 7-8:

"Correlation of Urine Samples to True 24-Hour Excretion" by W. D. Moss, E. E. Campbell, both H-5, and G. L. Tietjen, C-5

"The Distribution of Plutonium in Tissues" by M. F. Milligan, W. D. Moss, E. E. Campbell, Jean McClelland, and B. C. Eutsler, all H-5

"Urinary Excretion of Plutonium with Metals and Metabolites" by W. D. Moss, E. E. Campbell, Patricia C. Stein, and H. M. Ide, all H-5

"Mathematical Interpretation of

continued on next page

. . . Technical Side

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Plutonium Body Burden From Employees Urinary Excretion" by G. L. Tietjen and R. K. Zeigler, C-5

Presentation at Eighth Conference on Thermal Conductivity, Purdue University, Oct. 7-10:

"Thermal Diffusivity of SX-5 Graphite from 800 to 2800°C" by B. H. Morrison, N-1

Presentation at meeting, Modern Trends in Activation Analysis, National Bureau of Standards, Gaithersburg, Md., Oct. 7-11:

"Characteristics and Applications of a Large Sodium Iodide Detector Assembly" by J. L. Parker, K-5, D. M. Holm and B. K. Barnes, K-1

Presentation at Sandia Corporation, JOWOG-9 13th Meeting, Albuquerque, Oct. 7-12 (classified meeting):

"Theoretical and Experimental Analysis of LASL Large Scale HE Drop Test" by A. D. Randolph, GMX-3

Presentation at 12th Conference on Analytical Chemistry in Nuclear Technology, Oak Ridge National Laboratory, Gatlinburg, Tenn., Oct. 8-10:

"Analysis of Irradiated Fuel for Impurities by Carrier-Distillation Technique in a Hot Cell" by O. R. Simi and R. T. Phelps, CMB-1

"Combustion Micro-Manometric Determination of Carbon in Plutonium Sulfide" by Carolyn Sue MacDougall, M. E. Smith, and R. G. Waterbury, all CMB-1

"Detection of Light Element Impurities in High Purity Plutonium-238 by Gamma Spectroscopy" by J. Bubernak, Marion S. Lew, and G. M. Matlack, CMB-1

"An Evaluation of Two Methods for determining Uranium and Plutonium in Ceramic Reactor Fuel Materials" by G. B. Nelson, K. S. Bergstresser, G. R. Waterbury, and C. F. Metz, all CMB-1

"Inert Gas Fusion—Gravimetric Determination of Oxygen in Refractory Oxide Fuel Materials" by Carolyn Sue MacDougall, M. E. Smith, and G. R. Waterbury, all CMB-1

"Ion Exchange-Extraction Separation and Radiochemical Determination of Neptunium-237 in Plutonium-238" by J. Bubernak, M. S. Lew, and G. M. Matlack, all CMB-1

"The Preparation of an 18-Microgram Enriched ^{237}U Source" by K. Wolfsberg, B. J. Dropesky, and J. W. Barnes, all J-11

"The Separation and Spectrophotometric Measurement of Microgram Quantities of Neptunium in Plutonium" by R. G. Bryan and G. R. Waterbury, both CMB-1

Presentation at American Physical Society Meeting, Southeastern Section, Athens, Ga., Oct. 9-11:

"Tensor Operators in the Unitary Groups" by J. D. Louck, T-9 (invited talk)

Presentation at Optical Society of America Annual Meeting, Pittsburgh, Pa., Oct. 9-12:

"A 245-mm, f/3 Relay Lens Design for High Resolution" by B. Brixner, GMX-9

"Coupling Conditions and Perturbations in Some Configurations of Neutral Atomic Chlorine and Other Halogens" by L. J. Radziemski, Jr., CMB-1

Presentation at Colorado Section of the American Society for Nondestructive Testing, Denver, Colo., Oct. 10:

"The Worldwide Role of Nondestructive Testing as Part of the Technological Explosion" by G. H. Tenney, Dir. Off. (invited talk)

Presentation at New Mexico Branch Meeting of the American Society for Microbiology, University of New Mexico Medical School and Western Skies Hotel, Albuquerque, Oct. 11-12:

"Recovery of Bacteria from Radiation Damage" by B. J. Barnhart, H-4

Presentation at Western Industrial Health Conference, Las Vegas, Nev., Oct. 11-12:

"Health Physics Aspects of the Fission Product Inhalation Program" by S. J. Waligora, R. G. Cuddihy, and R. O. McClelland (Lovelace Foundation for Medical Education and Research, Albuquerque, N.M.) and C. R. Richmond, H-4

Presentation at officer installation meeting of the Caballeros de Vargas of the Santa Fe Fiesta Committee, Bishop's Lodge, Santa Fe, Oct. 12:

"An Unusual Visit to Spain" by W. H. Langham, H-4 (invited talk)

Presentation at Physical Metallurgy Meeting on the Deformation and Strength of Polycrystals, AIME, Detroit, Mich., Oct. 13-17:

"Subgrain Boundary Changes During Creep" by P. P. Gillis, University of Kentucky, W. V. Green and E. G. Zukas, both CMF-13

"The Variations in Microstructure of Aluminum Compressed at Different Rates and Temperatures" by H. J. McQueen, Department of Energy, Mines, and Resources at Ottawa, Canada, and J. E. Hockett, CMF-13

Presentation at 28th National Conference of the American Society for Nondestructive Testing, Detroit, Mich., Oct. 14-17:

"High Temperature Eddy Current Crack Detection" by N. B. Edenborough, GMX-1

"Integration of Ultrasonic Bond Signals" by N. B. Edenborough, GMX-1

Presentation at Conference on Plasma Instabilities in Astrophysics, Pacific Grove, Calif., Oct. 14-17:

"Simulation of Extragalactic Plasma Jets" by D. S. DeYoung

Presentation at Symposium on the Accurate Characterization of the High Pressure Environment, Washington, D. C., Oct. 14-18:

"The Equation of State of Selected Materials for High Pressure References" by W. J. Carter, S. P. Marsh, J. N. Fritz, and R. G. McQueen, all GMX-6

"The Solid-Liquid Phase Line in Copper" by R. G. McQueen, W. J. Carter, J. N. Fritz, and S. P. Marsh, all GMX-6

"The Hugoniot Equation of State of Sodium Chloride in the Sodium Chloride Structure" by J. N. Fritz, S. P. Marsh, W. J. Carter, and R. G. McQueen, all GMX-6

Presentation at International Atomic Energy Agency Basic Training Course in Management of Radioactive Wastes, Rio de Janeiro, Brazil, Oct. 14-25:

"Chemical Treatment of Liquids" by C. W. Christenson, H-7

"Biological Treatment of Liquids" by E. B. Fowler and C. W. Christenson, both H-7

"Treatment of Low and Intermediate Level Radioactive Concentrates" by C. W. Christenson, H-7

"Treatment of Highly Radioactive Wastes" by C. W. Christenson, H-7

"Ground Disposal of Liquids" by C. W. Christenson, H-7

Presentation at 21st Annual Gaseous Electronics Conference, Boulder, Colo., Oct. 16-18:

"Isotopic Effects in Reactions Between Nitrogen Molecular Ions and Nitrogen Molecules" by W. B. Maier, II, J-10

"Excitation of Neon by Electron Collision" by F. A. Sharpton, R. M. St. John, C. C. Lin, all of the University of Oklahoma, and F. E. Fajen, J-10

"Calculation of Electron Excitation Cross Sections of Hydrogen Molecules by the Method of Close Coupling" by F. E. Fajen, J-10, and C. C. Lin, University of Oklahoma

Presentation at Brookhaven National Laboratory, Nuclear Engineering Department, Upton, N. Y., Oct. 17:

"Time-Of-Flight Neutron Cross-Section Measurements Using a Nuclear Explosive Source" by W. K. Brown, P-3

Presentation at Technical Cooperative Program Panel 0-2 Seminar on "Explosive Chemical Reactions" at the U. S. Army Research Office, Durham, N.C., Oct. 21-23:

"Mechanism of Propagation of Steady Detonation" by W. Fickett, GMX-10

Presentation at Thermionic Conversion Specialists Conference, IEEE, Framingham, Mass., Oct. 21-24:

"Reactor Tests of Isothermal Irradiators" by C. V. Weaver and W. A. Ranken, both N-5

"Ultimate Heat Pipe Performance" by J. E. Kemme, N-5

"Zirconium Hydride Thermionic Space Power Supplies" by T. G. Frank, R. C. Anderson, and E. W. Salmi, all N-5

Presentation at 1968 IEEE Thermionic Conversion Specialists Conference, classified session, U. S. Army Natick Laboratory, Natick, Mass., Oct. 21-24:

"Irradiation Stability of Mo 40v/UO_2 Thermionic Reactor Fuel" by W. A. Ranken, A. J. Patrick, and M. C. Chaney, all N-5

Presentation at 19th Annual Meeting of the American Association for Laboratory Animal Science, Las Vegas, Nev., Oct. 21-25:

"African White-Tailed Rat (Mystromys albicaudatus) as an Experimental Animal for Metabolic Research" by C. R. Richmond, J. E. Furchner, Jerry E. London, and Glessie A. Drake, all H-4

"Influence of the Color Spectrum on Activity in Mice" by J. F. Spalding and L. M. Holland, both H-4

"Systemic Granulomatous Disease in the Monkey (Macaca speciosa)" by L. M. Holland and Patricia M. LaBauve, both H-4

Presentation at Symposium on Californium-252 sponsored by the New York Metropolitan Section of the American Nuclear Society, New York City, N.Y., Oct. 22:

"Nuclear Safeguards Applications of ^{252}Cf" by G. R. Keepin and R. B. Walton, both N-6

"Production of ^{252}Cf in Thermonuclear Explosions" by G. A. Cowan, J-11

Presentation at Seminar, AEC Advisory Committee on Cross Sections, Columbia University, New York City, N.Y., Oct. 23:

"Evidence for a Secondary Minimum in the Nuclear Potential Energy of Deformation" by J. R. Nix, T-9

Presentation at Training Course for Health Physics, Oak Ridge Associated Universities, Oak Ridge, Tenn., Oct. 23:

"Radiation Hazards in Space Flight" by W. H. Langham, H-4

Presentation at Helium Applications Symposium, Washington, D.C., Oct. 23-24:

"He-3, He-4 Dilution Refrigerators" by W. A. Steyert, CMF-9

Presentation at 15th Nuclear Science Symposium, IEEE, Montreal, Canada, Oct. 23-25:

"A Multiplier for use with E DE/DX Particle Identifiers" by W. P. Aiello, P-1, and S. Singer, P-4

"An Integrated Circuit Control System for the Pewee Reactor" by B. G. Strait and R. M. Lang, both N-4

"Vela-4 Satellite Energetic Experiment" by W. P. Aiello, P-1, S. Singer, J. P. Conner, and R. W. Klebesadel, all P-4

"Tests of Six High Temperature Neutron Detectors to 640°C" by J. L. Bacastow and E. O. Swickard, K-3

Presentation at Graphite Conference of the Pacific Coast Regional Convention of the American Ceramic Society, Pasadena, Calif., Oct. 23-25:

"The Structures of Carbons and Graphites and Their Relations to Properties" by M. C. Smith, CMF-13

Presentation at Vanadium-Alloy Development AEC Working Group Meeting, Ames Laboratory, Ames, Iowa, Oct. 24-25:

"Behavior of Vanadium-Titanium Alloys in Hot-Trapped Sodium" by F. B. Litton, J. H. Bender, and L. A. Geoffrion, all K-2

Presentation at 1968 Fall Meeting of the Western States Section, The Combustion Institute, Stanford Research Institute, Menlo Park, Calif., Oct. 28-29:

"Electric Signals Generated by Shock and Detonation Waves" by B. Hayes, GMX-8

Presentation at Seventh Rare Earth Research Conference, Coronado, Calif., Oct. 28-30:

"A Method for the Preparation of the Rare Earth Sesquicarbonates from the Corresponding Chloride Salts" by E. L. Head, CMF-2

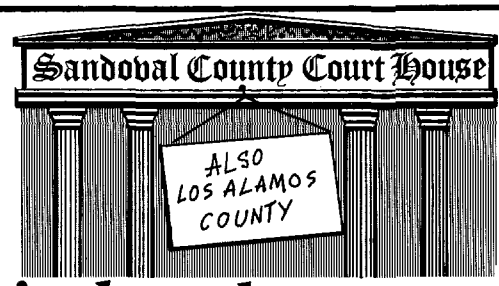
"Composition of d- and f- Transition Element Fluoride Complexes from Molar Refractivity" by R. A. Penneman, CMF-4

"Polymorphism in Heavy Rare Earth Dicarbides at High Pressures and Temperatures" by M. C. Krupka, N. H. Krikorian, and T. C. Wallace, all CMB-3

"Resistance Minima in Nondilute Rare Earth Alloys" by H. H. Hill,

continued on next page

20 years ago in los alamos



Culled from the Dec. 1948 files of the Los Alamos Skyliner by Robert Porton

Hill Gets New Weekly

After a four and a half month interval, Los Alamos again has its own newspaper. The Skyliner is the first exclusive Hill publication since the suspension of the Los Alamos Times in July. After the Southwestern Publishing Company was granted permission to proceed with plans for the newspaper, a circulation drive began. A prize of 1,000 silver dollars was awarded to the subscriber who suggested the best name for the paper. Richard D. Bokum, II, the publisher, announced that the winner is Oscar E. Lowry, a Zia Company employee.

White Rock is Born

With a twist of the wrist, the AEC is about to start a town. It will be situated about seven miles from the heart of Los Alamos on the road from Santa Fe to Bandelier. It will skirt the "Sacred Area" of the Pueblo Indians and house some 2,000 Hill workers and their families. Plans will include a school and a shopping center. The new community will be called White Rock, New Mexico.

Los Alamos County???

A former State Supreme Court Justice, A. L. Zinn of Santa Fe, has offered his services to officials, merchants and other residents who are interested in drafting a plan whereby a new county may be created here. The proposal would be presented to the 19th state legislature which convenes in Santa Fe in January. "The residents of Los Alamos must travel 80 miles each way to conduct their probate business at Bernalillo," he said, "and when the question of the voting franchise is settled during the next congress, all county affairs concerning the Hill will have to be conducted there at the Sandoval County Seat."

Hosmer Resigns

C. Craig Hosmer, AEC legal division attorney here, has submitted his resignation to the Commission in order to resume private practice in Long Beach, Calif. At the same time, Hosmer quit the post of Special Assistant United States Attorney for Los Alamos, a job he has held since his arrival. He is a graduate of the University of California and, after a year of graduate study at the University of Michigan, won his law degree at the University of Southern California. He served in the Navy during the war.

(Ed. Note—Mr. Hosmer is now serving as a Representative of the 32nd District of the State of California in the United States Congress and is a member of the Joint Committee on Atomic Energy.)

. . . Technical Side

continued from preceding page

CMF-DOT, R. O. Elliott and W. N. Miner, both CMF-5

"Separation of Rare Earths by Electrolysis with Porous Carbon Electrodes" by E. I. Onstott, CMB-8

Presentation at TMS-AIME Fall Meeting, Detroit, Mich., Oct. 28-31:

"Rapid Quenching Drop Smasher" by D. R. Harbur, J. W. Anderson, and W. J. Maraman, all CMB-11

Presented as part of recruiting trip to the University of Texas at Arlington, Texas, Oct. 29:

"Propulsion Reactor Testing" by R. E. Malenfant, N-2

Presentation at U. S. Atomic Energy Commission Plutonium-238 Isotopic Fuels and Heat Source Program Review, Washington, D.C., Oct. 29-30:

"The LASL Plutonium-238 Fuel Development Program" by J. A. Leary, CMB-11

what's doing

MESA PUBLIC LIBRARY EXHIBITS: Starting Dec. 2, "Painting Invitational" traveling exhibit from Museum of New Mexico. Nov. 20 through Christmas—pottery by Karen Hack.

PUBLIC SWIMMING: High School Pool—Open swimming Mondays from 7:30 to 9 p.m., Tuesdays and Wednesdays from 7:30 to 9:30 p.m. and Saturdays and Sundays from 1 to 6 p.m. Sundays from 7 to 9 p.m., Adult Swim Club.

LOS ALAMOS CONCERT ASSOCIATION: There will be no presentation in December.

NEWCOMERS CLUB: Dinner-dance Dec. 7 at the Los Alamos Golf Club. For information call Mrs. Harold Faire, 672-3733.

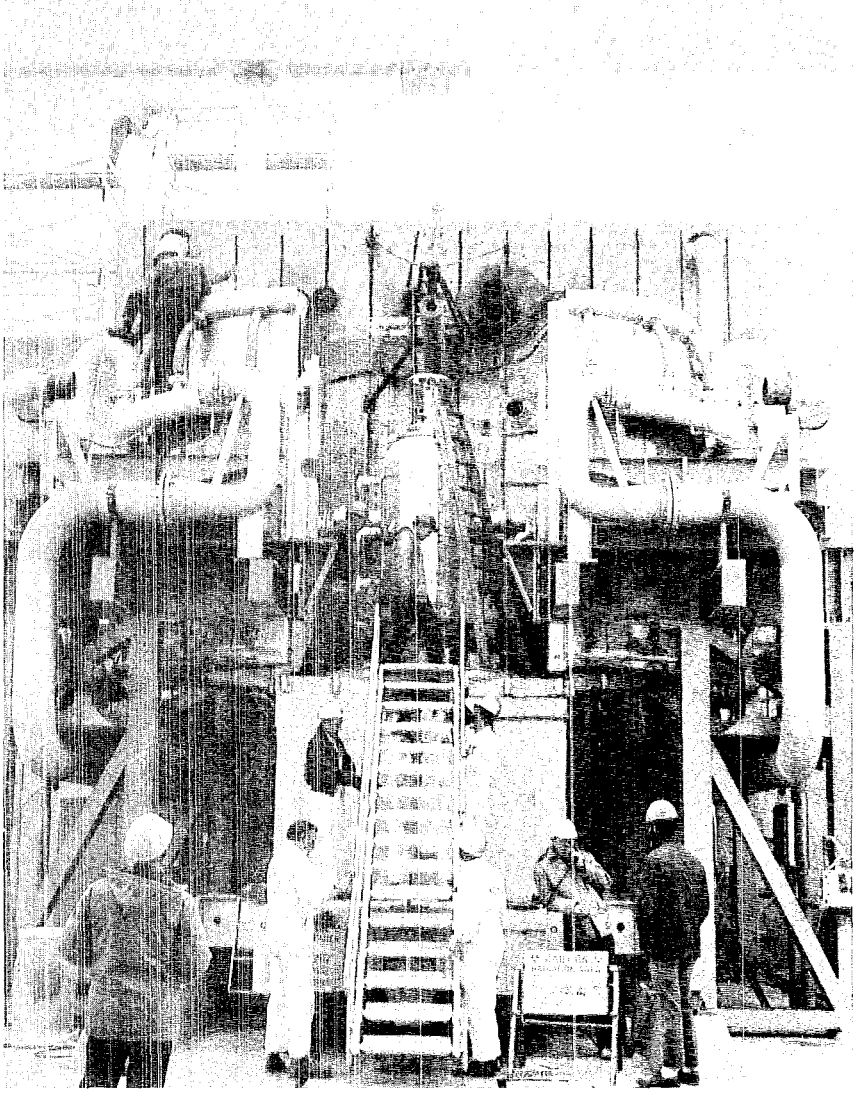
SIERRA CLUB: Luncheon meeting at noon, first Tuesday of each month at the South Mesa Cafeteria.

LOS ALAMOS LIGHT OPERA: Mail-order tickets on sale for Dec. 6, 7, 13 and 14 performances of Kern's and Hammerstein's "Showboat." Forward self-addressed, stamped envelope and check to: Los Alamos Light Opera, P.O. Box 535. Civic Auditorium box office opened Nov. 18. Hours are from 7 to 8:30 p.m. weekdays and from 11 a.m. to 1 p.m. and from 7 to 8:30 p.m. on performance days. Prices: $2 and $3. All seats reserved.

OUTDOOR ASSOCIATION: No charge; open to the public. Contact leader for information about specific hikes.

Dec. 8—Upper Frijoles Canyon, Dorothy Hoard, 672-3356.

Dec. 15—Down Water Canyon and up Ancho Canyon, Ken Ewing, 8-4488.



Powee I, a "testbed" nuclear reactor designed and developed by LASL, will be tested this month at the Nuclear Reactor Development Station in Nevada. Here, Powee sits on the pad at Test Cell "C" with the radiation shield open as minor adjustments are made prior to a calibration test. The radiation shield was initially designed for the larger Phoebus-model reactors. Powee is intended to test fuel elements and supporting hardware for possible inclusion in the NERVA-type reactors. (D-8 photograph by Robert Martin.)

BACK COVER

Westbound travellers on Pajarito Road now find their view of the Van de Graaff tower partially blocked by the High Voltage Test Facility, newest addition to the Laboratory skyline in the TA-3 area. The 5,151-square-foot building is scheduled for completion by Jan. 15, 1969. It will be used by Mique S. Talcott's ENG-7 group for testing high voltage energy storage systems. First assignment to be carried out in the new facility will be acceptance, inspection and evaluation of capacitors and related components for Scyllac. Construction cost is $123,300. Equipment installed in the building will bring the total project cost up to $175,000.

EDWARD GROTHUS
208 ANDANADA
LOS ALAMOS, NEW MEXICO 87544